Progress Report No. 10

Title: A Study of the Early Detection of Insect Infestations and Density/Distribution of Host Plants.

Citrus Insects Research
USDA, ARS
509 West Fourth St., Weslaco, Texas 78596

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(a) Inclement weather continues to hamper our efforts to survey the entire lower Rio Grande Valley area from aircraft. Six flight lines were flown in this effort during the reporting period. Additional flights were flown in the Seguin-Gonzales area where the walnut caterpillar had severely defoliated native pecans over extensive acreage, also at the Mission test site, Delta Lake test site and in the Brownsville area, where infestations of the citrus blackfly persist despite eradication efforts. Twenty-six hours of aerial photography were conducted during the reporting period.

(b) The urgent need for additional Skylab data, particularly with the use of the S-190B is apparent. The data received from S-190A on Skylab 2 clearly demonstrated the possibility of plotting distribution patterns of vegetation on both sides of the United States-Mexico border. The improved resolution with S-190B should afford an opportunity to identify host species of various pests that would make the data much more meaningful. The use of S-190B with color infrared or black and white infrared film offers the greatest possibility for success in the vegetation studies.

(c) If the data from the Seguin-Gonzales area is received and proves effective, we should be able to provide a significant amount of information about the extent of defoliation of native pecan trees caused by the walnut caterpillar in that area. Since this problem reaches the severity it attained this year only every 10 or 12 years the data could provide some important insights into the extent, nature and consequences of the cyclic pattern that this pest exhibits. Since the severe upsurge occurs at such lengthy intervals it is critical that we get maximum information from the current study.

(d) The results obtained from satellite data indicate significant potential for studies of vegetation in an area and its relationship to the spread of major pests. Since the data we have received to date has had less than maximum resolution we can only speculate about the possibilities with the most effective system available for this purpose. Hopefully we will receive such information from subsequent data.

The results obtained from aircraft flights indicate that at altitudes up to 10,000 feet (possibly beyond) we can gather information about pest damage, ecological factors that influence the spread of pests and precise placement of pest control measures, whether they are chemical, biological, sterile insect release, or male annihilation methods.

(e) In the remaining time period we will continue the aircraft surveys of the citrus area and continue our efforts to obtain more precise information on specific host plants of major pests in the border area. If we can obtain data that will enable us to delineate the density and distribution of major host plant species it should make a major contribution to the planning of surveillance programs designed to intercept pest species moving in either direction across the United States-Mexico border in the lower Rio Grande Valley area.

(f) Travel during this reporting period was confined to that made in relation to the collection of ground truth at test sites in the United States and to verify information from photography of the areas on both sides of the border. We anticipate no major changes in travel plans in the immediate future.